Virtual City, Addendum

A National Center on Unexpected Events in Urban Environments

- Cities are important, complex and varied
  - 80% of US population lives in metropolitan centers
    - Require shelter, food, medical care, community, …
  - Cities contain physical infrastructure, utilities, communications networks, a variety of facilities
  - Cities vary in size, density, culture, climate, transportation, industry, …
- Understanding their vulnerabilities and how to address them must be done in an interdisciplinary manner using technologically advanced methods
- A major research/training/tech transfer center is required in order to bring the right parties together

Core Facilities and Activities: Simulation Testbeds

- Physical environments
  - Structures, terrain, hazards
- Computer models
  - “Super SimCity”, including
    - Physical environment, weather, transportation, utilities, communication, human activity and behavior, disease
- Virtual reality environments
  - Special missions and environments
- Decision systems
  - For individuals and virtual organizations

Provided Capabilities and Facilities

- Competence in simulations of regions and phenomena
  - Large-scale, interoperable, multi-day
  - Man-in-the-loop
  - Decision support technologies
- Visualization
  - Activity command and control, VR training
  - Post-simulation analysis
- Hardware
  - Sensors
  - Design and deployment of prototype systems
- Dedicated computing infrastructure
  - Augmented by Grid connections to auxiliary centers & SC centers
  - For real-time and faster than real-time simulation/ visualization
  - Secure networking
- Appropriate physical environments
  - Structures
  - Terrain
  - Equipment

Simulation Is at the Core of Center Research and Experimentation

- Computer science, e.g.,
  - Visualization and UI
  - Artificial intelligence
  - Computational Grid
  - Networking, wired and wireless
  - Automated forces, agents
- Engineering, e.g.,
  - Sensors and other monitoring technology
  - Transportation efficiency
- Social science, e.g.,
  - Decision-making strategies
  - Regulatory structure
  - Organizational structures
  - Risk assessment
- Interdisciplinary, e.g.,
  - Human/virtual organizational behavior
  - Systems integration

…Basis for Policy, Education, Training, Tech Transfer, Response Infrastructure

- Policy advising
- Academic study and K-12 teaching
- Planning and policy making
  - For disasters and general urban planning
- Post-event analysis
- Unified situation understanding
- Tech transfer:
  - Industry consortium,
  - company incubation
- Identification and evaluation of proposed:
  - Technologies
  - Response plans
  - Strategies for resource allocation
- Disaster response exercises/training

Potential Partners

- Urban centers
  - Major: New York, Los Angeles, Washington
  - Minor: smaller, heartland cities
- Academic participants
  - ISI, other USC, Cal IT**2, Virginia Tech, UCLA, …
- Government
  - FEMA, EPA, NIJ – Justice Programs
  - California Office of Emergency Management
  - LA County Office of Emergency Management
  - City government and local law enforcement
- Industry consortium including, e.g.,
  - Candle, Sun, HP